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ABSTRACT

Several propositions concerning methodology of personality research in educational settings are presented in the context of medical school students. Academic performance, attrition, student satisfaction, and personality and value changes are discussed in their direct relation to institutional goals and objectives. Personality factors are of special importance since they encompass all possible non-demographic and non-intellective dimensions on which individuals might differ. Content analysis of spontaneous self-descriptions is most useful in assessing the whole individual. Tables present results of student scores and informational categories. (Author/BEF)

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TYPOLOGICAL APPROACHES TO THE ASSESSMENT OF MEDICAL STUDENT PERSONALITY

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Using the context of research on medical students as a backdrop, I would like to put forward several propositions concerning the methodology of personality research in educational settings. Generally, these propositions are reminders of things intuitively known to all of us, but seemingly forgotten by most as we go about our research.

One way to characterize our purpose in considering personality data in educational research is that we are interested in knowing which, if any, individual personality dispositions (e.g., traits, motives, needs, self-concepts) play a part in determining individual characteristics of importance to the educational institution. Among these we often find academic performance (GPA), attrition, student satisfaction, or even personality and value change. These categories are usually chosen because they are directly related to institutional goals and objectives, e.g., to turn out competent graduates, to minimize attrition, to be favorably perceived by students, or to have a certain impact on the attitudes and values of students. Personality factors are likely to be of importance in any such category because they encompass all possible non-demographic and non-intellective dimensions on which individuals might differ.

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To illustrate the propositions I would like to make, let us consider a hypothetical, but typical, example of personality research involving medical students. Upon entry to medical school, two hundred female students complete an inventory tapping six scales from Jackson's Personality Research Form: Autonomy, Order, Achievement, Affiliation, Nurturance, and Aggression. These had been chosen with an eye to their relevance as dimensions of personality possibly involved in the choice of medicine as a career and which theoretically relate to clinical and academic performance in medical school. So far, so good. Four years later, the sample is partitioned into high and low groups in clinical performance and high and low groups in academic performance. The mean scale scores for each group are contrasted using t-tests. Let us assume, in order to keep things simple, that scores on the Achievement and Order Scales are found to be higher for students with better academic performance and that scores on Affiliation and Nurturance are higher for those who do well in the clinical phase of the program. No other statistically significant group differences are found.

What have we learned about the personality factors related to academic and clinical performance using this research strategy? Our primary finding is that certain personality dispositions (as reported by the subject) are related to certain criteria. Stated another way, one could say that our ability to predict the criterion group into which a subject will fall has been augmented by a consideration of scores on certain personality

dimensions. We begin to see that our findings are rather incomplete when we take the case of any individual in our sample and try to predict criterion group membership from the initial personality configuration. Given, for example, a student with a high Order score and a low Achievement score, does one make the same prediction for her as for a person with the opposite configuration? And what happens when we take into account the other dimensions we have measured? Is Affiliation entirely unrelated to Achievement? Does it act as a moderator variable in some way, such that only students with high Achievement and low Affiliation scores do very well in the academic realm? The questions which our hypothetical research strategy leaves unanswered are quite numerous and although some painstaking post-hoc research could provide some answers, one wonders whether a more reasonable methodology might be found. Such a strategy would necessarily involve techniques for the simultaneous consideration of the relevant dimensions of personality and entail the possibility of making predictions for given individuals.

Fortunately, the search for an appropriate methodology has already been conducted and one can immediately consider the various cluster analytic techniques now available in most packages of statistical computer programs. As soon as one leans in this direction, however, one enters the forbidden realm of typology. Before presenting a few examples of typological approaches which seem fruitful, the issues surrounding the use of typologies should be reconsidered.

Type notions are not simply the half-way point between the idiographic and nomothetic approaches. The former assumes that individuals are so different one from another that few, if any, generalizations can be made. The nomothetic perspective holds that most laws of functioning apply to all individuals and that all individual differences are simply error variance. This assumption is basic to most of experimental psychology in which individual differences are a nuisance rather than the focus of interest as in personality psychology. What makes typologies more than a mere half-way point is the fact that they more closely approximate the true state of things, i.e., that some individuals <u>are</u> similar enough in their basic personality dispositions to be grouped together for research purposes, while other clusters of individuals will exhibit functioning which merits their separate classification.

Most current typologies are derived from the intersection of several or more dimensions which are crucial to the domain under consideration. The typologies generated by Jack Block (1971), for instance, or the modern French characterological system (LeSenne, 1957) rely on the simultaneous consideration of many variables. Choice of variables thus becomes a central problem in typology. One's choice obviously needs to be informed by theory and by previous research findings. Typologies generated without respect to theory usually turn out to be difficult to interpret and purely theoretical typologies often lack grounding in empirical findings (e.g., the Clark-

Trow typology which has never been shown to represent existing patterns of student subcultures).

A major problem in most personality research based on correlational methods is that the dynamic relationship of traits to each other is not adequately represented by the correlation coefficient. This was pointed out quite awhile ago by Else Frenkel-Brunswik (1974) who shows that substitution and displacement effects or alternative manifestations of the same drive are lost in any method which relies on correlational methods, i.e., factor analysis and many cluster analytic techniques. Not much progress has been made to develop a more appropriate methodology, although Atkinson's (1970) dynamics of action promises to provide this eventually. Unfortunately, this deficit affects our ability to construct sophisticated typologies.

Typological approaches complement factor analytic approaches as ways to reduce the complexity of one's data. The widespread use of factor analysis as opposed to casewise cluster analysis seems to imply that we care more about how variables cluster than how people do. What is equally disheartening is the rarity of using individual factor scores once a factor analysis has been performed. Factor scores can be treated as one would use scale scores. If this step is not carried out, one has no idea how individuals tend to fall in the multidimensional space that has been generated.

Given these brief considerations related to the establishment of typologies, we will consider several variations on the

methodology in question. First, let's return to our hypothetical study. Had we begun with a cluster analysis of the individuals involved, based on the six personality scales we had chosen, we might have isolated four of five groups of students with relatively distinct profiles. The proportions of each of these clusters represented in the different criterion groups would give us a good idea of the effect of certain whole personality patterns on the types of performance in question. One might even find an ideal type which is over-represented in the high performance group; perhaps these would be the students with high Achievement, high Affiliation, and high Nurturance scores. If proportional comparisons are not satisfying, one can easily run analyses of variance using scaled criterion variables rather than criterion groups. The strength of this method lies in the fact that one considers relatively whole individuals as opposed to discrete dimensions existing apart from the individuals being studied.

An approach which we found to be satisfactory in assessing the whole individual involved the spontaneous self-descriptions of 90 third-year students in the Inteflex premedical-medical program. Content analyses of the spontaneous self-descriptions resulted in the establishment of nine bipolar trait dimensions with an intermediate point on each for subjects not mentioning a particular dimension. These dimensions included "controlled, stable, calm" vs. "emotional, high-strung"; "introverted, reclusive" vs. "sociable, outgoing"; and "insecure" vs. "confident", for example.

A casewise cluster analysis was performed (Euclidean distances, complete algorithm) in order to isolate the self-description profiles which were similar. Four clusters were saved for subsequent analyses. For the sake of convenience, we labeled these the Achieving Sociables, the Carefree Positives, the Passive Negatives, and the Striving Solitaries. We found strong associations between cluster membership and first year GPA, self-reported social interaction outside the Inteflex program, satisfaction with the overall university experience, and satisfaction with the Inteflex program (Eta's ranged from .27 to .37). The clusters also differed in various types of personality and value change experienced in college (as indicated both by self-report ratings and inventory change scores). (Tables 1-3)

A third typological approach, based on self-report ratings of attitudes and interests in medicine in conjunction with self-concept data, helped us to establish some connections between personality and basic orientation to medicine. Emotional stability and sociability were found to be associated with interest in clinical, as opposed to research, aspects of medicine. A group of clinically-oriented but insecure and academically insufficient students was also isolated in this procedure. Retrospective analyses could now be done to study the admissions characteristics of students in problem groups with an eye to revising the selection process.

A final example of a typological approach involves a configuration of motives. We were interested in studying the effects of different motivational patterns on under and over-

achievement (SAT to first-year GPA). Using high-low splits on three variables relevant to motivation--Peer, Independence, Motivation for Grades, and Authoritarianism--we were able to make predictions of under and over-achievement for the eight groups. This was done by analyzing the "total motive strength" of individuals in each group and assuming that over-motivation would hinder SAT performance and facilitate long-term work reflected in the GPA. (See Table 4)

In conclusion, I will make a rather sweeping historical comment. It seems to me that as techniques for scaling dimensions of personality were rapidly improved, those dimensions, their properties and interrelationships, became more important items of study than the individuals they were derived from. Meanwhile, the typological approach, lacking an appropriate methodology in the 30's and 40's, fell into disrepute and has been slow to resurrect now that the required complex techniques are available. Typologies are often seen as unscientific, but the historian of science knows that typological studies and thinking tend to precede breakthroughs into more refined modes of analysis. By shifting some emphasis back to the whole individual, typologies may serve to reorient the fragmented analysis of personality dimensions which currently plagues research in educational settings.

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TABLE 1

Differences in Mean Satisfaction Ratings and Levels of Social Interaction among the Self-Concept Types*

	Self - Concept Type					
	1	2	3	4	eta	p
Satisfaction w/ overall university experience	4.92	5.41	4.60	4.80	.27	.07
Satisfaction w/ Inteflex Program	4.92	5.41	5.00	4.73	.29	.05
Satisfaction w/ own performance	4.41	4.66	4.46	4.93	.16	---
Interaction within Inteflex	4.48	4.66	3.86	4.46	.17	---
Interaction outside Inteflex	4.67	5.41	3.86	4.40	.37	.01
MSAT	693	703	709	721	.20	---
VSAT	639	640	645	649	.07	---
First year GPA	3.31	3.43	3.39	3.61	.28	.06
N	52	12	15	15		

*All ratings were made on a 1(low) to 6 (high) scale.

TABLE 2

Differences in Mean Ratings of Change on Various Dimensions of Values, Personality, and Professional Outlook*

Area of Change	Self - Concept Type 1	2	3	4	eta	p
Overall change as a person	4.17	3.67	4.33	4.35	.16	---
Values	3.38	2.58	2.53	2.85	.25	.12
Interpersonal relations	2.84	3.41	3.00	4.00	.27	.07
Political outlook	2.53	2.08	2.00	1.92	.20	---
Religion	2.38	2.16	3.33	2.30	.27	---
Cultural interests	3.09	2.16	2.06	2.57	.32	.02
Leisure activities	3.11	3.25	2.26	2.71	.27	---
Relations w/ parents	3.06	3.08	2.26	3.29	.20	---
View of doctors and their work	3.02	2.67	3.80	4.43	.41	.001
Level of certainty about want to be MD.	2.96	1.58	3.42	3.07	.33	.02
N	52	12	15	15		

*All ratings were made by the respondent on a 1 to 6 scale.

TABLE 3

Change Scores on OPI and CSQ Personality Scales*

Scale	Self-Concept type 1	2	3	4	p level
ch Family Independence	1.46 (21.5)	4.41 (20.8)	1.93 (19.5)	3.46 (23.4)	.07
ch Peer Independence	-.36 (23.8)	-1.16 (24.9)	.33 (23.3)	-.06 (25.8)	n.s.
ch Liberalism	-.05 (27.7)	-.08 (27.9)	-1.70 (28.1)	-2.0 (32.3)	.12
ch Social Conscience	.57 (29.7)	.25 (31.7)	-2.07 (30.0)	-1.3 (32.9)	.03
ch Cultural Sophistication	.80 (24.5)	.58 (25.4)	-1.40 (25.3)	- .06 (25.5)	n.s.
ch Anxiety	.11 (5.7)	.16 (5.0)	.66 (5.3)	2.00 (5.7)	n.s.
ch Intellectualism	-1.42 (17.6)	-2.58 (19.9)	-3.13 (17.9)	-3.93 (20.1)	n.s.
ch Authoritarianism	-.86 (7.7)	-1.08 (10.5)	-.73 (8.3)	-2.07 (7.5)	n.s.
ch Sociability	-2.02 (21.7)	-1.41 (24.2)	-3.80 (19.3)	-3.40 (19.9)	.10
N	52	12	15	15	

*Initial level is given in parentheses after the change score.

TABLE 4

Motivational Types and Academic Achievement[1]

Motivational Type			Discrepancy Score[2]	VSAT	1st Yr. GPA	Motive Strength
Peer Indep. *	Motiv. Grades *	Auth.				
Hi	Lo	Lo	-.39	636	3.20	0
Lo	Lo	Lo	-.02	618	3.26	+
Hi	Lo	Hi	-.11	618	3.20	+
Hi	Hi	Lo	+.12	628	3.42	+
Hi	Hi	Hi	+.14	626	3.40	++
Lo	Lo	Hi	+.18	598	3.19	++
Lo	Hi	Lo	+.35	621	3.46	++
Lo	Hi	Hi	+.60	595	3.38	+++

[1]Based on 737 applicants to the University of Michigan PreMedical-Medical Program (Inteflex).

[2]Calculated by subtracting normalized VSAT scores from normalized first year GPA's.